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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/924,862	08/08/2001	Roderick L. Hoffman	DP-304542	2903

7590

09/29/2003

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EXAMINER

CANTELMO, GREGG

ART UNIT

PAPER NUMBER

1745

DATE MAILED: 09/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/924,862

Applicant(s)

HOFFMAN ET AL.

Examiner

Gregg Cantelmo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6, 16-21 and 27-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 16-20, 27-31, 36 and 37 is/are rejected.
- 7) ☒ Claim(s) 21 and 32-35 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 August 2001 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Response to Amendment

1. In response to the amendment received July 16, 2003:
 - a. Claims 6-15 and 22-26 are cancelled. New claims 27-37 are presented.Claims 1-5, 16-21 and 27-37 are pending.

Election/Restrictions

2. Applicant's election with traverse of Groups II and III in Paper No. 4 is acknowledged. However the arguments therein are no longer pertinent since Applicant has cancelled claims 6-15 and 22-26 which correspond to Groups II and III.

The requirement is still deemed proper and is therefore made FINAL.

Information Disclosure Statement

3. The information disclosure statement filed August 8, 2003 has been placed in the application file and the information referred to therein has been considered as to the merits.

Drawings

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "47" has been used to designate both the width of body 40 and ribs (see page 7, lines 20-25). It would appear that the ribs are "ribs 41" as shown in Fig. 10. A proposed drawing correction or corrected drawings are required in reply to

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the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

5. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: that the cell structure is non conductive and acid resistant.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claim 27 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

With respect to claim 27, the specification does not have support for the combination of features recited therein.

While prior claim 7 recites that the battery cell structure is nonconductive and acid resistant, this limitation is only applicable to the scope of claim 7 including the limitations of the base claim 6. Since the specification never recites the limitations of

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claim 7 in the disclosure apart from claim 7, the original disclosure only has support for the limitations of claim 7 as presented in the original claims. Manipulation of these limitations to the other independent claims is held to be new matter since the original disclosure never clearly appreciated the newly claimed combination. Therefore the new combination raises new matter rejections since the scope of claim 27 was never described in the original specification.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1, 3-4 and 30 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. patent No. 6,071,641 (Zguris).

Zguris discloses a battery cell, comprising: a battery cell structure 15, said battery cell structure defining a receiving area, a positive alignment opening (defined by positive terminal 12 orifice in cover 16), and a negative alignment opening (defined by negative terminal 14 orifice in cover 16); a compressible stack of battery cell elements 11 and 13 in said receiving area, said compressible stack of battery cell elements

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comprising a plurality of positive plates 13 each having a positive tab portion depending outwardly from a periphery, a plurality of negative plates 11 each having a negative tab portion depending outwardly from a periphery, and a nonconductive separator 18 disposed in between said plurality of positive plates and said plurality of negative plates; and a cover 16 secured to said battery cell structure covering said receiving area, said positive alignment opening aligning said positive tab portion of each of said plurality of positive plates, and said negative alignment opening aligning said negative tab portion of each of said plurality of negative plates (Fig. 1 as applied to claim 1).

The receiving area where in the battery components 11, 18 and 13 are disposed is larger in both the length and width directions of the battery stack (Fig. 1 as applied to claims 3 and 30).

The electrodes and separators are compressed to fit into the pocket part of the battery case. Therefore the pocket part of the battery case is inherently smaller than the uncompressed state of the stack of electrodes and separators (col. 5, ll. 7-11 as applied to claim 4).

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-5, 30, 36 and 37 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. patent No. 4,603,093 (Edwards).

Edwards discloses a battery cell, comprising: a battery cell structure 14, said battery cell structure defining a receiving area, a positive alignment opening, and a negative alignment opening (defined by respective terminal orifices in cover 12); a compressible stack of battery cell elements in said receiving area, said compressible

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stack of battery cell elements comprising a plurality of positive plates 28 each having a positive tab portion depending outwardly from a periphery, a plurality of negative plates 30 each having a negative tab portion depending outwardly from a periphery, and a nonconductive separator 32 disposed in between said plurality of positive plates and said plurality of negative plates; and a cover 12 secured to said battery cell structure covering said receiving area, said positive alignment opening aligning said positive tab portion of each of said plurality of positive plates, and said negative alignment opening aligning said negative tab portion of each of said plurality of negative plates (Fig. 2 as applied to claim 1).

The cover provides a compressive force to the stack of battery elements (Fig. 2 as applied to claim 2).

The receiving area where in the battery components are disposed is larger in one direction of the battery stack (Fig. 3 as applied to claims 3 and 30).

The widths of the receiving areas are smaller in one direction relative to the length of the stack of battery cell elements (Fig. 3 as applied to claim 4).

The receiving areas constitute apertures for receiving the battery and the electrolyte is disposed in the separator of the battery. Therefore the receiving area apertures receive electrolyte (Fig. 2 as applied to claim 5).

The battery has a width and length smaller than a width and length of the receiving area as shown in Figs. 2 and 3 to enable placement of the battery in the receiving areas (as applied to claim 30).

The stack of battery elements is inserted in an uncompressed state and the cover applies a compressive force to the battery stack when the cover is secured to the battery cell structure (Figs. 2 and 5 as applied to claims 36 and 37).

Claim Rejections - 35 USC § 103

11. Claims 16, 17 and 20 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Edwards.

The battery comprises plural positive plates 28, plural separators 32 and plural negative plates configured into a compressible stack, a casing 14 receives the stack and has an interior height which is defined by the compressed height of the stack in Fig.

2. Claim 16 does not limit the interior height of the casing as a maximum height and therefore the term "an interior height" is interpreted as any number of heights along the length of the casing. In this case, the prior art teaches of an interior height of the casing defined by the compressed state of the battery as shown in Fig. 2.

The range of about 5-50% is a broad range and further not explicitly limited to 5-50% since the term about is applied to the range. The uncompressed state of the battery will obviously, if not inherently, be at least about 5% greater than the interior height defined by the compressed height of the stack shown in Fig. 2 (as applied to claim 16).

The separators are fiberglass mat separators which absorb electrolyte (col. 5, ll. 43-54 as applied to claim 17).

The battery has a width and length smaller than a width and length of the receiving area as shown in Figs. 2 and 3 to enable placement of the battery in the receiving areas (as applied to claim 20).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zguris in view of U.S. patent No. 5,227,260 (Rose).

The teachings of claim 1 have been discussed above and are incorporated herein.

The difference between claim 27 and Zguris is that Zguris does not teach of the battery cell being nonconductive and acid resistant.

The battery is a lead acid battery and thus it would have been obvious to use a casing which is acid resistant since it would have prevented the casing from being corroded by the acid electrolyte and provide an efficient means for containing the acid electrolyte within the cell casing.

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Typical lead acid casings are nonconductive materials to electrically isolate the positive and negative terminals of the battery and permit a nonconductive surface for handling of the battery.

Rose teaches of using a battery casing 25 of polypropylene which is non-conductive and acid-resistant (col. 5, ll. 40-46 as applied to claim 27).

Use of polypropylene materials as casings for lead-acid batteries are known in the art since they are known to provide a casing which is non-conductive and acid-resistant.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Zguris by using a polypropylene lead-acid battery casing since it would have provided a casing which is non-conductive and acid-resistant.

14. Claims 18 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Edwards in view of U.S. patent No. 5,618,641 (Arias).

The teachings of claims 1 and 16 have been discussed above and are incorporated herein.

The difference between claim 18 and 28 and Edwards is that Edwards does not teach of the interior height of the casing being about 20% smaller than the uncompressed height of the stack.

Edwards teaches of the desire to compress the stack of cells using a compressive force exerted by the cover on the stack of cells. One of ordinary skill in the art would have known that adjusting the compressive force, and thus the height of the

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stack, can be performed on a stack of cells to compensate for variances in the sizes of the individual cell components in the stack during operation of the battery.

Furthermore there does not appear to be any clear criticality of a height of 20% over the broader range of about 5-50%.

Arias teaches that increasing the compression, and therefore reducing the interior height improves the operating life and power of the cell (Table 1).

The motivation for adjusting the interior height to be about 20% smaller than the uncompressed stack to compensate for variances in the sizes of the individual cell components in the stack during operation of the battery thereby optimizing the life and power of the cell.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Edwards by increasing the compression and therefore decreasing the interior height since it would have compensated for variances in the sizes of the individual cell components in the stack during operation of the battery and thereby optimized the life and power of the cell.

15. Claims 19 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Edwards in view of U.S. patent No. 5,389,465 (Hooke).

The teachings of claims 1 and 16 have been discussed above and are incorporated herein.

The difference between claim 19 and 29 and Edwards is that Edwards does not teach of using snap locks for mating the cover and the casing.

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Snap locks and corresponding recesses for receiving the locks are well known in the art of securing objects to one another.

Hooke teaches that it is known in the art to use snap locks and corresponding recesses on the battery and cover as a simple means for securing the cover to the battery (Fig. 4 as applied to claims 19 and 29).

The motivation for using snap locks and corresponding recesses is that it provides a simplified and effective means for mating and securing the cover to the battery casing.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of since it would have provided a simplified and effective means for mating and securing the cover to the battery casing.

16. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Edwards in view of U.S. patent No. 5,227,260 (Rose).

The teachings of claim 1 have been discussed above and are incorporated herein.

The difference between claim 27 and Edwards is that Edwards does not teach of the battery cell being nonconductive and acid resistant.

The battery is a lead acid battery and thus it would have been obvious to use a casing which is acid resistant since it would have prevented the casing from being corroded by the acid electrolyte and provide an efficient means for containing the acid electrolyte within the cell casing.

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Typical lead acid casings are nonconductive materials to electrically isolate the positive and negative terminals of the battery and permit a nonconductive surface for handling of the battery.

Rose teaches of using a battery casing 25 of polypropylene which is non-conductive and acid-resistant (col. 5, ll. 40-46 as applied to claim 27).

Use of polypropylene materials as casings for lead-acid batteries are known in the art since they are known to provide a casing which is non-conductive and acid-resistant.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Edwards by using a polypropylene lead-acid battery casing since it would have provided a casing which is non-conductive and acid-resistant.

17. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Edwards in view of U.S. patent No. 6,376,126 (Faust).

The teachings of claim 1 have been discussed above and are incorporated herein.

The difference between claim 31 and Edwards is that Edwards does not teach of providing ribs.

Faust teaches that it is known to provide ribs on the inside of a battery casing (Fig. 11).

The ribs provide numerous benefits including: centering and securing cell elements of various size, permitting the use of one or few battery housing sizes for a

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wide range of energy capacities without the need for separate inserts and dampening the performance-degrading vibrations realized by the battery cell elements (col. 3, ll. 37-43 and 56-59).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Edwards by providing ribs along the inside of the casing since it would have centered and secured cell elements of various size, permitted the use of one or few battery housing sizes for a wide range of energy capacities without the need for separate inserts and dampened the performance-degrading vibrations realized by the battery cell elements.

Allowable Subject Matter

18. Claims 21 and 32-35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

19. The following is a statement of reasons for the indication of allowable subject matter: none of the prior art of record are considered to teach, suggest or render obvious the inventions of claims 21 and 32-35.

Claim 21 recites the battery cell of claim 16, wherein said casing further comprises: a first slot for receiving said plurality of positive lugs, said first slot being offset from a first side of said casing by a first predetermined distance and said positive lugs being offset a distance corresponding to said first predetermined distance; and a second slot for receiving said plurality of negative lugs, said second slot being offset

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from a second side of said casing by a second predetermined distance and said negative lugs being offset a distance corresponding to said second predetermined distance, said first predetermined distance being different than said second predetermined distance.

The prior art of record teaches of positioning the positive and negative terminals at the same predetermined distance from the sides of the battery. There is no apparent teaching or suggestion by the prior art of record for offsetting the first and second alignment openings for receiving positive and negative lugs, respectively, as recited in claim 21. The instant application teaches that providing this arrangement prevents the positive lugs from being inadvertently fitted into the negative alignment openings since the offset slots prevent alignment of the positive lugs into the negative alignment openings, and vice versa (see paragraph bridging pages 7 and 8 of the instant application).

This also applies to claim 32 which recites the same offset alignment openings.

Conclusion

20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. USPAT 4,336,314 discloses compressing a stack of cells.

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregg Cantelmo whose telephone number is (703) 305-0635. The examiner can normally be reached on Monday through Thursday from 8:00 a.m. to 5:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the

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examiner's supervisor, Pat Ryan, can be reached on (703) 308-2383. FAX communications should be sent to the appropriate FAX number: (703) 872-9311 for After Final Responses only; (703) 872-9310 for all other responses. FAXES received after 4 p.m. will not be processed until the following business day. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Gregg Cantelmo
Patent Examiner
Art Unit 1745

gc

A handwritten signature in cursive script, appearing to read "Gregg Cantelmo", written in black ink.

September 21, 2003